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4. A biocide concentrate composition for use in hard water and in the presence of organic material, consisting of:

- a.) a surfactant, for complexing or stabilizing iodine;
- b.) a biocidal amount of iodine complexed by the surfactant, or by hydriodic acid, and the surfactant;
- c.) propionic acid, propionates, their salts and esters, with ambient  $\text{NH}_3$ , or ammonium compounds arising from fermenting litter and manure to form ammonium propionate, thereby producing residual biocidal activity, and inhibiting microorganism formation; an acidifier to adjust the composition pH to within the acid range; and, optionally propylene glycol and equivalents, a buffer and, water.

6. The composition of claim 4, wherein propylene glycol is present for inhibiting dust formation.

7. A biocide concentrate composition, consisting of:

- a.) a surfactant for complexing or stabilizing iodine and hydriodic acid;
- b.) at least about 0.1% of a biocidal amount of iodine complexed by the surfactant; at least about 0.01% of hydriodic acid for reducing surface tension;
- c.) at least about 10% of propionic acid, propionates, their salts and esters with ambient ammonia or ammonia containing compounds arising from fermenting litter and manure to form ammonium propionate;
- d.) acidifiers to adjust the composition pH to within the acid range; and optionally, propylene glycol, a buffer and water.

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8. The composition of claim 7, wherein propylene glycol is present for solubilizing components of the composition to inhibit dust formation and, providing product stability and increasing penetrability into microorganisms and surfaces.

9. The composition of claim 4, in which the surfactant is a polyoxyethylene polyoxypropylene block copolymer.

10. The composition of claim 4, in which the surfactant is selected from the group consisting of non-ionic, laureth (11 - 16) carboxylic acid; PVP; nonyl phenoxy polyethoxy ethanol; polyethenoxy; and, polyethoxylated polyoxypropylene block copolymer.

11. The composition of claim 4, which comprises:  
at least about 0.1% iodine; at least about 0.01% hydriodic acid; at least about 10% propionic acid, propionates, their salts and esters; an acid sufficient to obtain a pH of about -2 to 3; at least about 1% of a buffer; and, at least about 5% of propylene glycol and equivalent glycols, all parts by weight.

12. The composition of claim 10, which comprises: about 0.1% - 5% iodine; about 0.01% - 2% hydriodic acid; about 10% - 75% propionic acid, propionates, their salts and esters; an acid sufficient to obtain a pH of about -2 to 3; at least about 1% of a buffer; and, about 5% - 30% of propylene glycol and equivalent glycols, all parts by weight.

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13. The composition of Claim 11, in which the acidifier and buffer is an acid selected from the group consisting of citric acid, lactic acid, sorbic acid, maleic acid, fumaric acid, their salts and esters, and mixtures thereof.

14. The composition of Claim 13, wherein water is present as a diluent.

15. The composition of claim 13, wherein about 20% - 40% by weight of water is present as a diluent in the composition.

18. The composition of claim 4, in which the composition has a shelf life of up to about one year to eighteen months, at ambient temperatures.

21. A method for reducing biocides from surfaces for animal husbandry, animal feed and food processing operations in the presence of hard water, consisting of: applying to the surface a solution containing a surfactant; a biocidal amount of hydriodic acid and complexed or stabilized iodine, propionic acid, propionates, their salts and esters for pH control, with ambient  $\text{NH}_3$  or ammonia containing compounds arising from fermenting litter and manure to form ammonium propionate, thereby producing residual biocidal activity, and inhibiting microorganism formation; and, acidifiers to adjust the composition pH to within the acid range.

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22. The method of Claim 21, in which biocidal activity is commenced within about ten minutes, remains active for about ten minutes to about five hours, and biocidal activity is maintained in the presence of about 50% organic matter.

23. The method of claim 21, including propylene glycol, and equivalent glycols for inhibiting dust formation.

24. The method of claim 21, wherein the solution further comprises propylene glycols and equivalent glycols for dissolving components of the composition, and for inhibiting dust formation.

25. The method of claim 21, in which the surfactant comprises a polyoxyethylene polyoxypropylene block copolymer with an HLB of about 1.0 - 7.0.

26. The method of claim 21, in which the surfactant is selected from the group consisting of polyethenoxy; non-ionic, laureth (11 - 16) carboxylic acid; PVP; nonyl phenoxypolyethoxy ethanol; and, polyethoxylated polyoxypropylene block copolymer.

28. The method of claim 21, in which the solution consists of: about at least 0.1% iodine; at least about 0.01% hydriodic acid; at least about 10% propionic acid, propionates, their salts and esters; an acidifier to obtain a pH of about -2 to 3; about 0% - 10% buffer; and, 0% - 10% propylene glycol and equivalent glycols, all parts by weight, for combining with ambient  $\text{NH}_3$  to form ammonium propionate.

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29. The method of claim 28, in which the solution consists of:

0% - 5% iodine; 0.01% - 2% hydriodic acid; about 10% - 75% propionic acid, propionates, their salts and esters; an acidifier to obtain a pH of about -2 to 3; about 0% - 10% buffer; and, about 0% - 10% propylene glycol and equivalents, all parts by weight, for combining with ambient  $\text{NH}_3$  to form ammonium propionate.

30. The method of claim 28, in which the acidifier and buffer is an acid selected from the group consisting of citric acid, lactic acid, maleic acid, fumaric acid, sorbic acid, their salts and mixtures thereof.

31. The method of claim 21, in which the solution further comprises water as a diluent.

32. The method of claim 31, in which the water diluent comprises about 20% - 40% by weight of the composition.

34. The method of claim 21, in which the solution has a shelf life of at least one year at ambient temperatures.

35. The method of claim 21, in which activity of the solution is maintained in the presence of up to about 50% of organic matter.

41. The method of claim 28 wherein the solution is applied as a bovine teat dip.